

Remarks

Claims 1-51 were originally filed in this application.

Claims 39-51 were previously withdrawn from consideration as being directed to a non-elected invention, without prejudice or disclaimer.

No new claims are added.

No claims are currently canceled.

Claims 1, 4, 5, 6, and 8 are currently amended without introducing new matter.

As a result claims 1-38 are pending for examination with claims 1, 10, 20, and 34 being independent claims.

Rejection under 35 U.S.C. § 112

Claims 1-9 and 20-38 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The claims are allegedly unclear because “the third liquid circuit is the same as the second liquid circuit.”

To clarify some features of the invention, independent claim 1 is currently amended to recite that the third liquid circuit involves a fluid connection between a reservoir, the second pump, and the inlet of a second compartment. In contrast, the second liquid circuit connects the inlet of the second compartment to its outlet. One skilled in the art would understand, in view of the specification and the accompanying drawings, that the third liquid circuit differs from the second liquid circuit. Independent claim 1 and dependent claims 2-9 are thus not unclear.

Independent claim 20 particularly recites a method involving establishing various liquid circuits through compartments of an electrochemical device. A person skilled in the art would understand that establishing a liquid circuit involving flowing fluid from a reservoir to the second compartment through the second pump differs from establishing another liquid circuit of concentrating liquid from an outlet of a compartment of the electrochemical device to the inlet the compartment, by way of the second pump. Independent claim 20 and dependent claims 21-33 are thus not unclear.

Independent claim 34 does not recite a second or a third liquid circuit. Thus, the rejection is improper. To be sure, each of claims 34-38 is not indefinite because one skilled in the art would be able to ascertain the scope of each of these claims in view of the present specification and accompanying drawings.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-9 and 20-38 under 35 U.S.C. § 112 is respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 1-38 were rejected under 35 U.S.C. § 102(e)¹ as being unpatentable over the disclosure of Rela in U.S. Patent No. 6,607,668 (hereinafter “Rela”).

The respective subject matter of each of independent claims 1, 10, 20, and 35 cannot be anticipated by the disclosure of Rela because this reference does not disclose each and every element in the manner recited in each of these independent claims.

Rela teaches a water purifier having an integrated system that controls the components thereof. The water purifier includes a plurality of unit operations that represent stages in the water purification process. Supply water is pretreated by directing it into a sediment pre-filter module, a softener module, and a sediment removal and dechlorination module. (Rela at Abstract.) The pre-treated water is supplied to a reverse osmosis module which separates the water into two streams, a purified water stream and a concentrate stream. The purified water is passed to an electrodeionization module which further purifies the water. Purified water is further treated in an ultraviolet sterilization module. The sediment pre-filter module incorporates an automated cleaning or backwashing feature to flush the ceramic elements therein to remove accumulated particles from the surfaces of the ceramic elements. (Rela at column 5, line 66 to column 6, line 14.) Flushing the ceramic elements is performed at predetermined intervals by utilizing a high velocity water stream from a pure water reservoir in a direction opposite to the direction of the flow of supply water through the tubular element housing. (*Id.*) A water quality monitor

¹ Claims 1-38 are also considered as rejected under 35 U.S.C. § 102(b) because the cited reference issued on August 19, 2003, before the before the filing date of this application, November 13, 2003.

measures ionic concentration in the pure water outlet from the electrodeionization module, which the control system utilizes to calculate electrical voltage and current directed so that optimum outlet water quality is achieved. (Rela at column 3, lines 62-67.) Control of the electrodeionization module entails measuring the flow rate and pressure of process streams, electrode streams, and concentrate streams. Rela thus discloses integrating the various unit operations of a water purification system under the control of a controller.

The cited passage at column 10 and FIGS. 1, 2, and 3 of Rela cannot support the *prima facie* case of anticipation because it does not disclose connecting an outlet of a compartment, such as a concentrating compartment, of an electrochemical device to an inlet of the compartment. Instead, at lines 18 *et seq.* of column 10, Rela explains (with emphasis added) that the “concentrate and electrode streams are directed through the EDI module 54 and then to the central wastewater manifold or a drain connection 96.” There is no disclosure in Rela of a system comprising an electrochemical device with an outlet of a compartment thereof fluidly connected to an inlet of the compartment, or of a method of treating a liquid comprising establishing a second liquid circuit having concentrating liquid flowing from an outlet of a compartment of an electrochemical device to an inlet of the compartment, as respectively recited in independent claims 1 and 20. There is also no disclosure of a circulation line fluidly connectable to any of a first compartment outlet and a second compartment outlet of an electrochemical device, or of a method of treating water comprising circulating a concentrate stream through a concentrating compartment of an electrochemical device, as respectively recited in independent claims 10 and 34.

Because the disclosure of Rela fails to disclose each and every element in the manner recited in each of independent claims 1, 10, 20, and 35, the respective subject matter of each of these independent claims cannot be anticipated by this reference. Dependent claims 2-9, 11-19, 21-33, and 35-38 respectively depend from independent claims 1, 10, 20, and 34. The respective subject matter of each of these dependent claims also cannot be anticipated by the disclosure of Rela for at least the same reasons mentioned above.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-38 under 35 U.S.C. § 102 is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the disclosure of Rela.

There is no valid *prima facie* case of obviousness because the disclosure of Rela fails to teach or suggest each and every element in the manner recited in each of independent claims 1, 10, 20, and 34. The *prima facie* case of obviousness is also improper because no reasoned explanation has been presented that would have led one skilled in the art to modify the system disclosed by Rela and arrive at the respective subject matter of each of independent claims 1, 10, 20, and 34.

Rela, as noted above, discloses discharging the concentrate stream from the electrodeionization module to a drain, by way of a central wastewater manifold. (Rela at column 10, lines 18 *et seq.*) Rela thus cannot teach utilizing the same liquid from a compartment of the module, *e.g.*, circulating the liquid through at least one compartment of the module during operation thereof, to produce a treated liquid. Rela also fails to suggest such features or recognizes the advantages associated therewith. Therefore the disclosure of Rela cannot support a *prima facie* case of obviousness because it fails to teach or suggest each and every element in the manner respectively recited in each of independent claims 1, 10, 20, and 34.

The *prima facie* case of obviousness is also improper because no reasoned explanation has been presented that would have led one skilled in the art to modify the disclosure of Rela and arrive at a treatment system comprising an electrochemical device with a liquid circuit fluidly connecting an outlet of a compartment of the device to the inlet of the compartment, as recited in independent claim 1; or to a method of treating a liquid comprising establishing a liquid circuit of concentrating liquid flowing from an outlet of a compartment of an electrochemical to an inlet of the compartment, as recited in independent claim 20.

The *prima facie* case of obviousness is also improper with respect to independent claims 10 and 34 because there is no cogent explanation presented that would have led one skilled in the art to modify the disclosure of Rela and result in a treatment system comprising an electrochemical device and a circulation line fluidly connectable to a compartment of the device, or a method of treating water comprising circulating a concentrate stream through a concentrating compartment of an electrochemical device.

Notably, Rela discloses that each of the various unit operations that produce wastewater directs such wastewater into a central wastewater manifold. A person skilled in the art would have recognized that reject wastewater from a reverse osmosis device or backwash water diverted into the central wastewater manifold would produce undesirable and unpredictable operating consequences if circulated through the electrodeionization module. Thus, any *prima facie* case of obviousness is rebutted because one skilled in the art would not have modified the disclosure of Rela and arrive at the subject matter respectively claimed in independent claims 1, 10, 20, and 34.

Therefore, because no *prima facie* case of obviousness can be established, or is rebutted, against any of independent claims 1, 10, 20, and 34, the respective subject matter of each of these claims would not have been obvious over the disclosure of Rela. The subject matter of each of dependent claims 2-9, 11-19, 21-33, and 35-38, each of which respectively depends from independent claims 1, 10, 20, and 34, would also not have been obvious over the disclosure of Rela for at least the same reasons mentioned above.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-38 under 35 U.S.C. § 103 is respectfully requested.

Conclusion

In view of the foregoing Amendments and Remarks, this application is in condition for allowance; a notice to this effect is respectfully requested. If the examiner believes, that the application is not in condition for allowance, the examiner is requested to call Applicants' attorney at the telephone number listed below.

If this Response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this Response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762 (Ref. No. I0168-7082.19).

Respectfully submitted,

Anil D. Jha et al., Applicants

By: /elias domingo/
Elias Domingo, Reg. No. 52,827
Peter C. Lando, Reg. No. 34,654
Lowrie, Lando & Anastasi, LLP
Riverfront Office Park
One Main Street
Cambridge, MA 02142
Tel. 617-395-7000

Siemens Ref. No. 2003P86280US
USFilter Ref. No. USF/ION/128US
LLA Ref. No.: I0168-7082.19

Dated: March 4, 2008